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EXAMINER	
CHACKO, SUNIL	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/577,930	LUELLAU ET AL.	
	Examiner	Art Unit	
	SUNIL CHACKO	2625	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2011*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-18* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-18* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. Applicant's amendment filed on 10/06/201 has been entered. No Claims amended or cancelled. Claims 1-18 are still pending in this application, with claims 1, & 11 being independent.

Response to Arguments

2. Applicant's arguments with respect to claims 1-18 have been considered are persuasive.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 1-3, 8-12, & 16-18 are rejected under U.S.C. 103(a) as being unpatentable over Uemura (US Application # 2001/0048460 A1) in view of Gelbart (US Patent #5,049,901)

As to Claim 1,

Uemura teaches *a device for the digital exposure of light-sensitive materials,* (Uemura teaches a apparatus for recording images using photosensitive medium by exposure to light beams, see paragraph 8)

with an electronic picture memory for storing a master image, (Uemura teaches a the use of memory to store the master image, see paragraph 21 and Fig. 3 block 36)

with an exposure unit which comprises a light source, (Uemura teaches an exposure head see paragraph 20 and Fig, 1 block 12)

a rapid intermediate memory for storing a strip-like region of the master image is provided, (Uemura teaches a buffer memory that stores the image data, so that it can be outputted more efficiently, see paragraph 21. Uemura further teaches that the buffer are connect to the controller paragraph 21 & Fig. 3)

a drive device comprising motors and a motor control, for the movement of the exposure unit parallel to the surface of the light-sensitive material, with a scroll means for scrolling a picture strip of the master image through the light

modulator, and with a control device for synchronizing the drive device with the scroll means, (Uemura teaches a controller that controls both the motor of the drum that scrolls the image photosensitive material and also the light source, it is the controllers job to ensure that the two are synchronized, see paragraph 35 and 21, see also Fig. block 34)

Uemura does not explicitly teach *an electronically activatable spatial light modulator for representing a two-dimensional part picture of the master image, and imaging optics for projection of the two-dimensional part picture onto the light-sensitive material* or *the picture data for the two-dimensional part picture to be exposed in each case, may be transmitted onto the light modulator synchronously with the movement of the exposure unit.*

However, in a similar field of endeavor Gelbart teaches an exposure system that uses two dimensional light modulators, see column 1 lines 55-60. Gelbart teaches that synchronization between the motion of the light sensitive material and the sequence of transferring data from the array; see column 2 lines 38-42. It would have been obvious for one skilled in the art at the time of the invention to combine Uemura in view of Gelbart, because it would allow the user to use a two dimensional modulator that is compatible with most scanning methods, see column 1 lines 55-60.

As to Claim 2, Uemura et al in view of Gelbart further teaches *a device according to claim 1,*

wherein the intermediate memory is arranged in the exposure unit.(Uemura teaches that the memory is connected directly to the light source driving means, which reads on the exposure unit, see paragraph 22)

As to Claim 3, Uemura et al in view of Gelbart further teaches *a device according to claim 1,*

wherein the intermediate memory comprises two part memories for the storage of two picture strips of the master image, (Uemura teaches that two memory parts HM1 and HM2 that stores the two-dimensional image, see paragraph 21 and Fig. 3 block HM1 & HM2)

wherein during the transmission of the data from the first part memory to the light modulator for the exposure of the first picture strip, the data for the exposure of the next picture strip of the master image may be transmitted from the picture memory to the second part memory (Uemura teaches that the image data from 1st image memory is sent to the image divider, and from there then sent to separate memory storages, from there the memory is sent to the light modulator via line buffers See Fig. 3 and paragraph 21)

As to Claim 8, Uemura et al in view of Gelbart further teaches *a device according to claim 1,*

wherein the exposure time for a pixel is roughly equal to the travel time which the exposure unit requires for traveling over a pixel width. (Uemura teaches that the recoded image is made up of pixels, these pixels are recorded on the film, by the turning on and off the light source, it can be understood from this that as the exposure unit moves across the position of the pixel it is able to create the pixel onto the recoding medium, in this short period of time. see paragraph 18)

As to Claim 9, Uemura et al in view of Gelbart further teaches *a device according to claim 1,*

wherein the division of the master image into picture strips is effected in a manner such that the picture strips partly overlap and that the light quantity per pixel column orientated in the scroll direction, which serves for the exposure, is arranged reducing towards the edges of the picture strips, so that a uniform exposure of the complete printing plate results. (Uemura teaches that after the image divider, the image data is split and then sent to the laser diodes for outputting in picture strips, these picture strips are shown in Fig. 4, as A1-A4. These images are outputted onto the recording medium, in the scroll direction so that image covers the printing plate, See paragraph 27)

As to Claim 10, Uemura et al in view of Gelbart further teaches *a device,*

wherein the division of the master image into picture strips is effected in a manner such that the picture strips abut on one another in a seamless manner

and that the light quantity per pixel column orientated in the scroll direction, which serves for exposure, is set such that the optical impression of the left and of the right edge of the picture strip is identical, so that a uniform exposure of the complete printing plate results. (Uemura teaches that after the image divider, the image data is split and then sent to the laser diodes for outputting in picture strips, these picture strips are shown in Fig. 4, as A1-A4. It is see from this figure that the image is seamless connected together. These images are outputted onto the recording medium, in the scroll direction so that image covers the printing plate, See paragraph 27)

As to Claim 11

Uemura et al teaches *a method for the digital exposure of light-sensitive materials* (Uemura teaches a apparatus for recording two-dimensional images using photosensitive medium by exposure to light beams, see paragraph 8)

using a device with an electronic picture memory for storing a master image, (Uemura teaches a the use of memory to store the master image, see paragraph 21 and Fig. 3 block 36)

h an exposure unit which comprises a light source, (Uemura teaches an exposure head see paragraph 20 and Fig, 1 block 12)

the *use of a rapid intermediate memory in which a strip-like region of the master image is stored* (Uemura teaches a buffer memory that stores the image data, so that it can be outputted more efficiently, see paragraph 21. Uemura

further teaches that the buffer are connect to the controller paragraph 21 & Fig. 3)

a drive device, comprising motors and a motor control, for moving the exposure unit parallel to the surface of the light-sensitive material, with a scroll means for scrolling a picture strip of the master image through the light modulator, and with a control device for synchronizing the drive device with the scroll means, (Uemura teaches a controller that controls both the motor of the drum that scrolls the image photosensitive material and also the light source, it is the controllers job to ensure that the two are synchronized, see paragraph 35 and 21, see also Fig. block 34)

Uemura does not explicitly teach *an electronically activatable spatial light modulator for representing a two-dimensional part picture of the master image,* or *the picture data for two-dimensional the part picture to be exposed in each case is transmitted onto the light modulator synchronously with the movement of the exposure unit.*

However, in a similar field of endeavor Gelbart teaches an exposure system that uses two dimensional light modulators, see column 1 lines 55-60. Gelbart teaches that synchronization between the motion of the light sensitive material and the sequence of transferring data from the array; see column 2 lines 38-42. It would have been obvious for one skilled in the art at the time of the invention to combine Uemura in view of Gelbart, because it would allow the user to use a two

dimensional modulator that is compatible with most scanning methods, see column 1 lines 55-60.

As to Claim 12, Uemura et al in view of Gelbart further teaches *a method according to claim 11,*

wherein the intermediate memory comprises two part memories for storing two picture strips of the master image, and (Uemura teaches that two memory parts HM1 and HM2 that stores the two-dimensional image, see paragraph 21 and Fig. 3 block HM1 & HM2)

wherein during the transmission of the data from a first part memory to the light modulator for the exposure of a first picture strip, the data for the exposure of the next picture strip of the master image is transmitted from the picture memory to the second part memory. (Uemura teaches that the image data from 1st image memory is sent to the image divider, and from there then sent to separate memory storages, from there the memory is sent to the light modulator via line buffers See Fig. 3 and paragraph 21)

As to Claim 16, Uemura et al in view of Gelbart further teaches *a method according to claim 11,*

wherein the exposure time for a pixel is roughly equal to the travel time which the exposure unit requires for traveling over a pixel width. (Uemura teaches that the recoded image is made up of pixels, these pixels are recorded on the film, by the turning on and off the light source, it can be understood from

this that as the exposure unit moves across the position of the pixel it is able to create the pixel onto the recoding medium, in this short period of time. see paragraph 18)

As to Claim 17, Uemura et al in view of Gelbart further teaches *a method according to claim 11,*

wherein the division of the master image into picture strips is effected in a manner such that the picture strips partly overlap, and that the light quantity per pixel column orientated in the scroll direction, which serves for exposure, is arranged decreasing towards the edges of the picture strip, so that a uniform exposure of the complete printing plate results. (Uemura teaches that after the image divider, the image data is split and then sent to the laser diodes for outputting in picture strips, these picture strips are shown in Fig. 4, as A1-A4. These images are outputted onto the recording medium, in the scroll direction so that image covers the printing plate, See paragraph 27)

As to Claim 18

Uemura et al in view of Gelbart further teaches *a method according to claim 11,*

wherein the division of the master image into picture strips is effected in a manner such that the picture strips abut one another in a seamless manner and that the light quantity per pixel column orientated in the scroll direction, which serves for exposure, is set such that the optical impression of the left and of the right edge of the picture strip is identical, so that a uniform exposure of the

complete printing plate results. (Uemura teaches that after the image divider, the image data is split and then sent to the laser diodes for outputting in picture strips, these picture strips are shown in Fig. 4, as A1-A4. It is see from this figure that the image is seamless connected together. These images are outputted onto the recording medium, in the scroll direction so that image covers the printing plate, See paragraph 27)

6. Claim 4-7, & 13-15 are rejected under U.S.C. 103(a) as being unpatentable over Uemura (US Application # 2001/0048460 A1) in view of Gelbart (US Patent #5,049,901) in further view of Isono et al. (US Patent # 6,249,306 B1)

As to Claim 4 Uemura et al in view of Gelbart does not explicitly teaches *a device according to claim 1,*

wherein the control device comprises a computer with a control program, wherein the picture memory is also accommodated in the computer.
However, Isono et al. teaches a Multi-Beam Drawing Method that consists of a computer program that is capable of being used by a computer wherein the picture memory is stored by the computer, See column 7 lines 43-48. It would have been obvious to one skilled in the art, at the time of the invention to combine Uemura in view Gelbart et al. in further view of Isono et al. because incorporating the method of Mutli-Beam Drawing onto a control program and

storing it on computer would enable the product to be easily transferable and accessibly among several devices.

As to Claim 5, Uemura et al in view of Gelbart in further view of Isono teaches *a device according to claim 4,*

wherein the control program comprises an exposure data manager, a picture data manager and a position data manager, wherein the picture data of the picture memory, is divided into data packages suitable for the stripwise exposure by the exposure data manager, (See paragraph 21 and Fig 3, Uemura teaches that the Image Divider splits the image data into pieces which are then sent to line buffers which divide the image data to be sent into diode lasers which use the exposure data to output the image)

and are transferred to the picture data manager, wherein the exposure data manager produces position data and speed data for the motor control, which are transferred to the position data manager. (Uemura teaches that the line buffers are connected to an effective signal generating circuit which uses image data from the line buffer image data to obtain the needed information to control the speed and position for motor control, by creating signals from the effective signal generating circuit See Fig. 3 and paragraph 34 & 35)

As to Claim 6, Uemura et al in view of Gelbart in further view of Isono teaches *a device according to claim 5,*

wherein the control device comprises the scroll means which cooperates with a trigger card designed with regard to hardware, wherein the trigger card is connected to position sensors which deliver data on the actual position of the exposure unit, and wherein the trigger card controls the data flow from the intermediate memory to the light modulator synchronously with the movement of the exposure unit, wherein a handshake between the trigger card and the motor control causes the motor control to call up the position and speed data from the position data manager and to accordingly activate the servomotors. (Uemura teaches an effective signal generating circuit, which reads on trigger card, See Fig. 3. Uemura further teaches an Exposure Drum Movement Control Circuit that is connected to a Controller, which communicates with the effective signal generating circuit, See Fig. 3. Exposure Drum Movement Control Circuit keeps track of the position of the exposure unit, the movement of the exposure unit reads on the scroll means See paragraph 20. Uemura further teaches that effective signal generating circuit (ENm) sends signals to the line buffers which then send the image data to the light modulator. The communication between the line buffer and the ENm and the communication between the ENm and the Exposure Drum movement control circuit, enables the synchronous movement on the exposure unit motor.)

As to Claim 7 Uemura et al in view of Gelbart in further view of Isono teaches *a device according to claim 6,*

wherein the scroll means cooperates with the picture data manager in a manner such that the stripwise transmission of the picture data from the picture data manager to the intermediate memory is always effected just at the time when no data for the activation of the light modulator is taken from the respective part memory. (Uemura teaches the movement of the exposure drum, which reads on scroll means, is dependant on the stripwise transmission of the image data into the 2nd Image memory, which is split into various sections so that it can be sent into from line buffers memory to the laser diodes , which read on light modulator, for output, See Fig. 3 and paragraph 20 & 22)

As to Claim 13 Uemura et al in view of Gelbart teaches *a method according to claim 11,*

comprises an exposure data manager, a picture data manager and a position data manager , wherein the picture data of the picture memory is divided by way of the exposure data manager into data packages which are suitable for the stripwise exposure, and are transferred to the picture data manager, (See paragraph 21 and Fig 3, Uemura teaches that the Image Divider splits the image data into pieces which are then sent to line buffers which divide the image data to be sent into diode lasers which use the exposure data to output the image)

wherein the exposure data manager produces position data and speed data for the motor control which is transferred to the position data manager. (Uemura teaches that the line buffers are connected to an effective signal generating circuit which uses image data from the line buffer image data to obtain the

needed information to control the speed and position for motor control, by creating signals from the effective signal generating circuit See Fig. 3 and paragraph 34 & 35)

Uemura doest not explicitly teach a *control device* that *comprises a computer with a control program,* however Isono et al. teaches a Multi-Beam Drawing Method that consists of a computer program that is capable of being used by a computer wherein the picture memory is stored by the computer, See column 7 lines 43-48. It would have been obvious to one skilled in the art, at the time of the invention to combine Uemura in view of Gelbart in further view of Isono et al. because incorporating the method of Mutli-Beam Drawing onto a control program and storing it on computer would enable the product to be easily transferable and accessibly among several devices.

As to Claim 14, Uemura et al in view of Gelbart in further view of Isono teaches *a method according to claim 11,*

wherein the control device comprises the scroll means, wherein the scroll means cooperates with a trigger card which is designed with regard to hardware and which is connected to position sensors, wherein the position sensors provide data on the actual position of the exposure unit, and wherein the trigger card controls the data flow from the intermediate memory to the light modulator synchronously with the movement of the exposure unit, and wherein a handshake between the trigger card and the motor control causes the motor

control to call up the position and speed data from the position data manager, and to accordingly activate the servomotors. (Uemura teaches an effective signal generating circuit, which reads on trigger card, See Fig. 3. Uemura further teaches an Exposure Drum Movement Control Circuit that is connected to a Controller, which communicates with the effective signal generating circuit, See Fig. 3. Exposure Drum Movement Control Circuit keeps track of the position of the exposure unit, the movement of the exposure unit reads on the scroll means See paragraph 20. Uemura further teaches that effective signal generating circuit (ENm) sends signals to the line buffers which then send the image data to the light modulator. The communication between the line buffer and the ENm and the communication between the ENm and the Exposure Drum movement control circuit, enables the synchronous movement on the exposure unit motor.)

As to Claim 15, Uemura et al in view of Gelbart in further view of Isono teaches *a method according to claim 14,*

wherein the scroll means cooperates with the picture data manager in a manner such that the stripwise transmission of the picture data from the picture data manager to the intermediate memory is always effected just at the time when no data for the activation of the light modulator is taken from the respective part memory (Uemura teaches the movement of the exposure drum, which reads on scroll means, is dependant on the stripwise transmission of the image data into the 2nd Image memory, which is split into various sections so that it can be

sent into from line buffers memory to the laser diodes , which read on light modulator, for output, See Fig. 3 and paragraph 20 & 22)

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUNIL CHACKO whose telephone number is (571)270-7221. The examiner can normally be reached on Mon-Thurs 8AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benny Q. Tieu can be reached on 571-272-7490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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